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**“जानने का अधिकार, जीने का अधिकार”**

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

**“पुराने को छोड़ नये के तरफ”**

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 4165 (1991): Thermostats for general purpose electric ovens [ETD 32: Electrical Appliances]

**“ज्ञान से एक नये भारत का निर्माण”**

Satyanaaranay Gangaram Pitroda

Invent a New India Using Knowledge



**“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”**

Bhartṛhari—Nītiśatakam

“Knowledge is such a treasure which cannot be stolen”





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**IS 4165 : 1991**

**भारतीय मानक**

**REAFFIRMED**

**2006**

**सामान्य प्रयोजन के विद्युत-ओवनों  
के लिए तापस्थायी की विशिष्टि  
( पहला पुनरीक्षण )**

***Indian Standard***

**THERMOSTATS FOR GENERAL PURPOSE  
ELECTRIC OVENS—SPECIFICATION**

***( First Revision )***

**UDC 681.536.5 : 683.95 : 621.365**

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**BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002**

## CONTENTS

	<i>Page</i>
1 SCOPE	1
2 TERMINOLOGY	1
3 GENERAL REQUIREMENTS	1
4 GENERAL NOTES ON TESTS	2
5 RATING	2
6 CLASSIFICATION	2
7 MARKING	2
8 PROTECTION AGAINST ELECTRIC SHOCK	2
9 STARTING OF MOTOR OPERATED APPLIANCES	2
10 INPUT AND CURRENT	2
11 TEMPERATURE-RISE	2
12 OPERATION UNDER OVERLOAD CONDITIONS OF APPLIANCES WITH HEATING ELEMENTS	3
13 ELECTRICAL INSULATION AND LEAKAGE CURRENT AT OPERATING TEMPERATURE	3
14 RADIO AND TELEVISION INTERFERENCE SUPPRESSION	3
15 MOISTURE RESISTANCE	3
16 INSULATION RESISTANCE AND ELECTRIC STRENGTH ( AFTER HUMIDITY TREATMENT )	3
17 OVERLOAD PROTECTION	3
18 ENDURANCE	3
19 ABNORMAL OPERATION	4
20 STABILITY AND MECHANICAL HAZARDS	4
21 MECHANICAL STRENGTH	4
22 CONSTRUCTION	4
23 INTERNAL WIRING	4
24 COMPONENTS	4
25 SUPPLY CONNECTIONS AND EXTERNAL FLEXIBLE CABLES AND CORDS	4
26 TERMINALS FOR EXTERNAL CONDUCTORS	4
27 PROVISION FOR EARTHING	4
28 SCREWS AND CONNECTIONS	4
29 CREEPAGE DISTANCES AND CLEARANCES	4
30 RESISTANCE TO HEAT, FIRE AND TRACKING	4
31 RESISTANCE TO RUSTING	4
32 RADIATION HAZARDS	4
33 FINISH	5
TABLE 101	7
ANNEX A TABLES OF TYPE TESTS	8
ANNEX B SAMPLING PROCEDURE FOR ACCEPTANCE TESTS	8
ANNEX C ELECTRONIC CIRCUITS	8
ANNEX D MEASUREMENT OF TEMPERATURE WITH THERMOMETER	8
ANNEX E ALTERNATIVE TESTS FOR PROTECTED MOTOR UNITS	8
ANNEX F IMPACT TEST APPARATUS	8
ANNEX G THERMAL CONTROLS AND OVERLOAD RELEASE	9
ANNEX H MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES	9
ANNEX J TEST FOR FIRE-RESISTING PROPERTIES	9
ANNEX K BNF JET TEST FOR DETERMINATION OF THICKNESS OF COPPER AND NICKEL PLATING	9
ANNEX L APPROXIMATE MEASUREMENT OF THICKNESS OF CHROMIUM ON NICKEL, STEEL AND COPPER	9

**AMENDMENT NO. 1 AUGUST 1992**  
**TO**  
**IS 4165 : 1991 THERMOSTATS FOR GENERAL**  
**PURPOSE ELECTRIC OVENS — SPECIFICATION**

*(First Revision)*

Substitute 'IS 302-1 (1979) Safety of household and similar electrical appliances : Part 1 General requirement (*fifth revision*)' for IS 302 : 1979 General and safety requirements for household and similar electrical appliances (*fifth revision*) wherever it appears in the standard.

( END 32 )

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Reprography Unit, BIS, New Delhi, India

*Indian Standard***THERMOSTATS FOR GENERAL PURPOSE ELECTRIC OVENS — SPECIFICATION***(First Revision)***1 SCOPE**

This clause of IS 302 : 1979 is applicable except as follows:

**1.1 Replacement**

This standard covers the general and safety requirements and methods of tests for thermostats of the fluid filled or stem type with an air break switch intended for use in ac circuits at voltages not exceeding 250 V and having current ratings not exceeding 20 amperes.

**1.2 Replacement**

This standard does not cover the thermostats for use with electric water heaters or precision electric oven thermostats such as those used in the laboratory ovens.

**2 TERMINOLOGY**

This clause of IS 302 : 1979 is applicable except as follows:

**2.4, 2.8 to 2.11, 2.17 to 2.19, 2.21 to 2.25,  
2.28, 2.30, 2.31, 2.38 to 2.41, 2.46 and 2.47**  
not applicable.

*Additional Sub-clauses***2.101 Oven Thermostat**

A thermostat comprising a switch operated by a temperature sensing element and incorporating a manual control for varying the operating temperature, the temperature sensing element being in thermal communication with the oven when fitted.

**2.102 Fluid Filled Thermostat**

An oven thermostat in which the temperature sensing element is a fluid which actuates the switch by thermal expansion or contraction.

**2.103 Stem Type Thermostat**

An oven thermostat in which the temperature sensing element is a rigid stem which actuates the switch either by its own thermal expansion or construction or by the thermal deflection of a bi-metal component which it encloses.

**2.104 Control Head**

That portion of the thermostat intended to be fitted on the control panel of the oven.

**2.105 Switch Head**

That portion of the thermostat which contains the switch and its operating mechanism.

**2.106 Auxiliary Components**

Parts which are used to mount the thermostat, to transmit the manual control drive, or to provide an indication of the setting or position of the switch. These may be combined with or built into the oven thermostat, or may be remote and coupled mechanically with the thermostat.

**2.107 Operating Temperature**

The temperature at which the switch contacts open under the specified conditions of test.

**2.108 Differential**

The difference between the temperatures at which the switch contacts open and close under the specified conditions of test.

**2.109 Calibration Point**

A point ( declared by the manufacturer ), intermediate between the minimum and maximum temperatures of the range of the oven thermostat, and used for the purpose of temperature setting.

**2.110 Displacement**

The difference between the setting of the control knob and the operating temperature of the thermostat. A positive displacement is one that provides an operating temperature higher than the knob setting.

**2.111 Switching Cycle**

The period of time between successive switch-on operations of the thermostat under the specified conditions of test.

**2.112 Indicated Temperature**

The temperature indicated by the knob on the scale of the thermostat.

**3 GENERAL REQUIREMENTS**

This clause of IS 302 : 1979 is applicable except as follows:

**3.1 Para 2 not applicable.**

#### 4 GENERAL NOTE ON TESTS

This clause of IS 302 : 1979 is applicable except as follows:

4.1 Notes 3 to 5 not applicable.

4.7 to 4.9 and 4.12 to 4.14 not applicable.

#### 5 RATING

This clause of IS 302 : 1979 is applicable except as follows:

##### 5.1 Replacement

The rated voltage will not exceed 250 V.

The preferred voltage will be 240 V.

##### 5.2 Replacement

The current rating shall be 15, 20 or 25 amperes.

*Additional Sub-clause*

##### 5.101 Range

The lowest operating temperature of the thermostat shall not be greater than 95°C and the highest operating temperature shall be not less than 230°C.

#### 6 CLASSIFICATION

This clause of IS 302 : 1979 is applicable except as follows:

6.1(a) (2) and 6.1(a) (3) not applicable.

#### 7 MARKING

This clause of IS 302 : 1979 is applicable except as follows:

##### 7.1 Replacement

The following information shall be marked on the outer visible surface or on a label firmly attached to the switch head of the thermostat:

- a) Indication of the source of manufacture;
- b) Type number, model number and serial number, if any;
- c) Rated voltage in volts and current in amperes;
- d) The words 'ac only';
- e) The operating temperature or range of temperature; and
- f) Country of manufacture.

7.2, 7.4 and 7.9 not applicable.

*Additional Sub-clause*

7.101 The thermostats may also be marked with the Standard Mark.

#### 8 PROTECTION AGAINST ELECTRIC SHOCK

This clause of IS 302 : 1979 is applicable except as follows:

8.2 to 8.4 and 8.7 to 8.9 not applicable.

#### 9 STARTING OF MOTOR OPERATED APPLIANCES

This clause of IS 302 : 1979 is not applicable.

#### 10 INPUT AND CURRENT

10.1 This clause of IS 302 : 1979 is not applicable.

#### 11 TEMPERATURE-RISE

This clause of IS 302 : 1979\* is applicable except as follows:

##### 11.2 Replacement

The thermostat is set at its highest setting and is mounted in a suitable enclosure so that the temperature of the stem differs from the temperature set on the thermostat by  $5 \pm 1^\circ\text{C}$  and the contacts are in the closed position but as near the point of opening as possible.

11.4 to 11.6 not applicable.

##### 11.7 Replacement

The thermostat is operated at the rated voltage and rated current till the steady state conditions are established.

##### 11.8 Replacement

The temperature-rise for the various part of the thermostat shall not exceed the values given in Table 1 and sealing compound, if any, shall not flow out.

The values in the Table are based on an ambient temperature not normally exceeding 40°C but occasionally reaching 50°C. However, the temperature-rise values specified are based on 40°C.

11.9 and 11.10 not applicable.

#### 12 OPERATION UNDER OVERLOAD CONDITIONS OF APPLIANCES WITH HEATING ELEMENTS

This clause of IS 302 : 1979 is not applicable.

### **13 ELECTRICAL INSULATION AND LEAKAGE CURRENT AT OPERATING TEMPERATURE**

This clause of IS 302 : 1979 is applicable except as follows:

#### **13.1 Replacement**

The thermostat is connected to supply at its rated voltage so that the contacts are closed and the rated current is passed through the same. The test is made while the thermostat is connected to the supply.

### **14 RADIO AND TELEVISION INTERFERENCE SUPPRESSION**

This clause of IS 302 : 1979 is not applicable.

### **15 MOISTURE RESISTANCE**

This clause of IS 302 : 1979 is applicable except as follows:

15.2 and 15.3 not applicable.

### **16 INSULATION RESISTANCE AND ELECTRIC STRENGTH ( AFTER HUMIDITY TREATMENT )**

This clause of IS 302 : 1979 is applicable except as follows:

#### **16.1 Replacement**

The insulation and electric strength of appliances shall be adequate.

Compliance is checked by tests given in 16.2 and 16.4 which are made on cold thermostat after the test given in 15.4 in the humidity cabinet or in the room in which the sample was brought to the prescribed temperature after reassembly of those parts which may have been removed.

#### **16.2 Replacement**

An ac test voltage is applied as specified in items 1 and 4 of the table of 16.4, the metal foil having a size not exceeding  $20 \times 10$  cm and being moved if necessary, so as to test all parts of the surface.

The test voltage is 1.06 times the rated voltage, or 1.06 times the upper limit of the rated voltage range for appliances for dc only, for single-phase appliances and for three-phase appliances which are also suitable for single-phase supply, if the rated voltage or the upper limit of the rated voltage range does not exceed 250 V.

The leakage current measured after the application of the test voltage shall not exceed the value given in 13.2.

#### **16.3 Not applicable.**

#### **16.4 Para 1 Replacement**

Immediately after the test given in 16.2, the insulation is subjected for 1 minute to a voltage of substantially sine-wave form having a frequency of 50 or 60 Hz. The value of the test voltage and the points of application are shown in the following Table.

### **17 OVERLOAD PROTECTION**

This clause of IS 302 : 1979 is not applicable.

### **18 ENDURANCE**

This clause of IS 302 : 1979 is applicable except as follows:

18.2 The thermostat shall be subjected to 50 000 cycles of operation under the conditions of the tests given below:

#### **18.2.1 Mechanical Operation**

The thermostat shall be arranged to operate at the highest marked current and the corresponding voltage for 2 500 switching cycles, each cycle consisting of marking and breaking the current under these conditions by rotating the control knob from the 'off' to the maximum 'on' position at a rate not exceeding 300 switching cycles per hour. The test shall be conducted with an alternating current having a frequency of 50 cycles and approximately of sine-wave form, with a substantially non-inductive load.

#### **18.2.2 Thermal Operation**

The thermostat shall be arranged to operate at the highest marked current and the corresponding voltage at a control dial setting at the calibration point for 47 500 switching cycles, each cycle consisting of making and breaking the current under these conditions by heating and cooling the temperature sensing element of the thermostat, at a rate not exceeding 200 switching cycles per hour. The test shall be conducted with alternating current having a frequency of 50 cycles and approximately of sine-wave form, with a substantially non-inductive load. During this test, the switch head of the thermostat shall be maintained at an ambient temperature of  $90 \pm 10^\circ\text{C}$ .

18.2.3 The test differential shall be measured before and after the endurance test as described in 10.2.3.2 and shall not vary by more than  $3^\circ\text{C}$  or 50 percent of the initial value, whichever is greater.

18.2.4 At the end of the endurance test, the thermostat contacts shall not show electrical or mechanical failure or undue burning or putting of the contacts and the thermostat shall have an insulation resistance of not less than  $10 \text{ M}\Omega$  between:

- i) parts of different polarity; and
- ii) live parts and the accessible metal parts.

The operating temperatures after the endurance test shall not differ from the corresponding temperatures determined before the test by more than 12°C.

18.3 to 18.5 not applicable.

## 19 ABNORMAL OPERATION

This clause of IS 302 : 1979 is not applicable.

## 20 STABILITY AND MECHANICAL HAZARDS

This clause of IS 302 : 1979 is not applicable.

## 21 MECHANICAL STRENGTH

This clause of IS 302 : 1979 is applicable.

## 22 CONSTRUCTION

22.1 This clause of IS 302 : 1979 is applicable except as follows:

22.4, 22.9 to 22.12, 22.15 to 22.18, 22.20, 22.23 to 22.30 and 22.32 not applicable.

*Additional Sub-clauses*

### 22.101 Means of Adjustment

The thermostat shall be provided with means of adjustment such that the operating temperature may be varied smoothly and progressively over the range declared by the manufacturer.

### 22.102 Means of Displacement

The thermostat and its auxiliary components, if combined, may be provided with means of applying a displacement to the extent of 30°C. Where the displacement is provided by an adjustment of the auxiliaries, the thermostat shall be capable of accepting such displacement to the extent of 30°C. Where the provision for displacement has been provided in one direction only, this direction shall be marked on the thermostat.

### 22.103 Off Position

If an off position is provided, it shall pass the test specified in 102.5.

### 22.104 Contacts

The contacts shall be made of silver, tungsten or such other material which is not easily fouled (that is, corroded and pitted) and shall be of adequate size so that they may carry the full rated current of the thermostat without deterioration, and pass the endurance test (see 18).

22.105 All parts of the thermostat which are made from non-metallic materials shall be non-flammable and shall not deteriorate after prolonged use at their normal operating temperatures and by occasional exposure to an ambient temperature of 125°C.

22.105.1 Parts of the thermostat intended to be mounted inside the oven shall be constructed to withstand occasional heating to a temperature of 315°C without deterioration.

22.105.2 The thermostat and its auxiliary components, excluding those which would be accessible to the user and those mentioned in 22.105 above, shall be capable of operating in an occasional ambient temperature of 125°C without deterioration.

## 23 INTERNAL WIRING

This clause of IS 302 : 1979 is applicable except as follows:

23.4, 23.5 and 23.7 not applicable.

## 24 COMPONENTS

This clause of IS 302 : 1979 is applicable except as follows:

24.2 and 24.4 to 24.10 not applicable.

## 25 SUPPLY CONNECTIONS AND EXTERNAL FLEXIBLE CABLES AND CORDS

This clause of IS 302 : 1979 is applicable except as follows:

25.3 to 25.14 not applicable.

## 26 TERMINALS FOR EXTERNAL CONDUCTORS

This clause of IS 302 : 1979 is applicable.

## 27 PROVISION FOR EARTHING

This clause of IS 302 : 1979 is applicable except as follows:

27.3 not applicable.

## 28 SCREWS AND CONNECTIONS

This clause of IS 302 : 1979 is applicable.

## 29 CREEPAGE DISTANCES AND CLEARANCES

This clause of IS 302 : 1979 is applicable.

## 30 RESISTANCE TO HEAT, FIRE AND TRACKING

This clause of IS 302 : 1979 is applicable.

## 31 RESISTANCE TO RUSTING

This clause of IS 302 : 1979 is applicable.

## 32 RADIATION HAZARDS

This clause of IS 302 : 1979 is applicable.

**33 FINISH**

This clause of IS 302 : 1979 is applicable except as follows:

**33.1 Replacement**

The external finish used on metal components shall be of a heat and moisture resisting nature and shall be adversely affected by variations in temperature under normal operating conditions or during the endurance test.

**33.2 Not applicable.***Additional Clauses***101 CONTROL HEAD AND MOUNTING ARRANGEMENTS**

The control head of the thermostat shall be supplied with a fixing and locating means to comply with the panel drilling shown in Fig. 101.

The spindle and mounting arrangements shall be as shown in Fig. 102.

**102 PERFORMANCE REQUIREMENTS****102.1 Calibration Point**

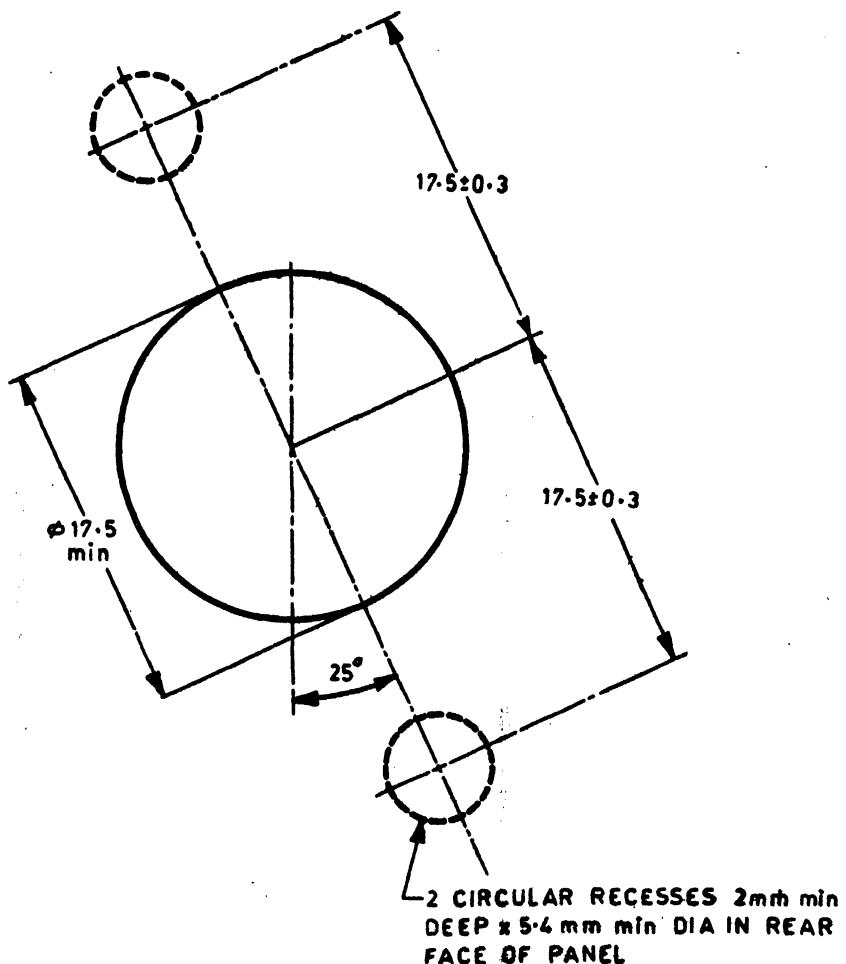
It should lie between 150 and 200°C.

**102.2 Operating Characteristics**

**102.2.1** The operating temperature shall not differ by more than 8°C from the indicated dial temperature at the calibration point.

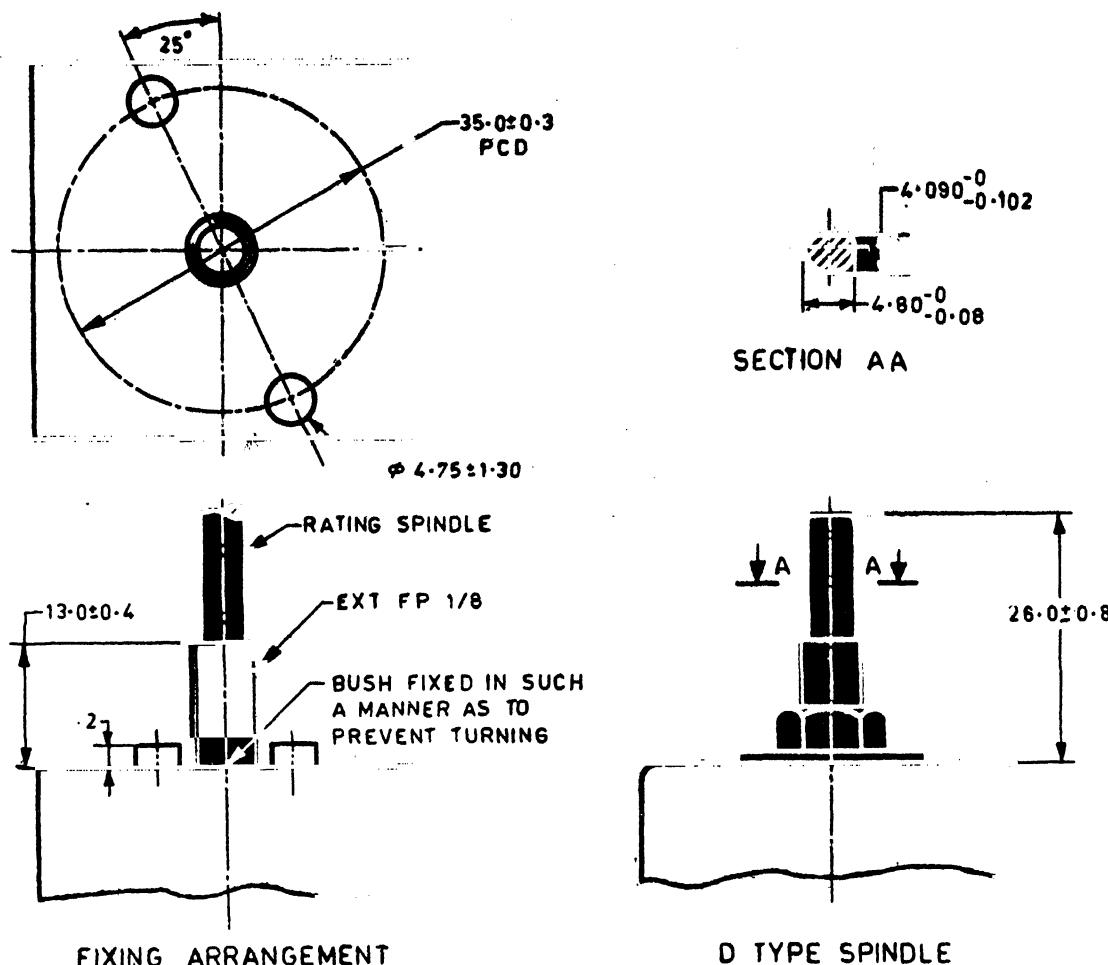
**102.2.2** At thermostat settings corresponding approximately to the highest and lowest temperature of the thermostat, the operating temperature shall not differ by more than 16°C from the indicated temperature.

**102.2.3** Thermostats shall have a differential within 10°C for any operating temperature.



All dimensions in millimetres.

**FIG. 101 LOCATING DIMENSIONS FOR THERMOSTAT MOUNTING PANEL**



All dimensions in millimetres.

FIG. 102 SPINDLE AND MOUNTING ARRANGEMENT

### 102.3 Calibration Accuracy and Differential

#### 102.3.1 Apparatus

A solid aluminium cylinder 75 mm in diameter, mounted horizontally in a rectangular box having sides of sheet metal and ends of heat resisting insulating material shall be used. The ends of the box shall be 150 mm square and the sides 500 mm long. Four holes of a size large enough to accommodate the samples under test shall be drilled through the cylinder parallel to its axis and with the centres of the holes equispaced on a circle 40 mm in diameter and concentric with the cylinder. A fifth hole shall be drilled through the axis of the cylinder, to take a calibrated mercury-in-glass thermometer. The cylinder shall be heated by passing a suitably regulated electric current through a heating element surrounding, but insulated from the cylinder. The space between the heating element and the box shall be filled with heat-insulating material, such as glasswool.

#### 102.3.2 Procedure

The thermostat under test shall be set at the calibration point declared by the manufacturer and its stem or bulb shall be located in one of the four holes described in 102.3.1. The calibrated mercury thermometer shall be placed in the central hole of the apparatus. In the case of a fluid-filled thermostat  $75 \pm 10$  mm of the connecting capillary, if any, shall be within the cylinder together with the bulb. The temperature of the cylinder shall be maintained at  $27 \pm 2^\circ\text{C}$  below the calibration point temperature, for not less than one hour. The temperature of the cylinder shall then be increased at a rate not exceeding  $1^\circ\text{C}$  per minute until the thermostat contacts open, as shown by a pilot lamp connected in series. The temperature at which the contacts open shall be recorded as the cut-out temperature of the thermostat. The temperature of the cylinder shall now be allowed to fall uniformly at a rate not exceeding  $1^\circ\text{C}$  per minute until the thermostat contacts close.

The temperature at which the contacts close shall be recorded as the cut-in temperature. This cycle shall be performed three times. The mean of the three sets of readings shall be taken as the operating temperature and the average difference between the cut-out temperatures and the cut-in temperatures shall be taken as the temperature differential of the thermostat. Where an initial calibration displacement has been marked on the thermostat allowance shall be made for the value of this displacement in the operating temperature obtained as above.

#### 102.4 Operating Range of the Thermostat

The test in 102.3.2 shall be repeated with the thermostat set in turn at the highest and the lowest points of the temperature range declared by the manufacturer and the range shall be calculated.

#### 102.5 Off Position ( Low Temperature )

A positive displacement of  $27^{\circ}\text{C}$  shall be applied to the thermostat, with the control set in the off position and the contacts connected in series with an indicating lamp in a 250 V circuit. The whole of the thermostat and its auxiliary components shall be maintained at  $-7^{\circ}\text{C}$  for 30 minutes. The lamp shall not become energized at this temperature.

### 103 OPERATION UNDER OVERLOAD CONDITIONS

103.1 The thermostat shall be loaded with 1.25 times the rated current at 1.1 times the rated voltage and operated for 200 cycles of make and break at a rate of four cycles per minute. During this test, there shall be no sustained arcing and the contacts shall not have deteriorated appreciably.

## 104 TESTS

### 104.0 Categories of Tests

Tests are classified as type, routine and acceptance tests.

#### 104.1 Type Tests

The tests specified in Table 101 shall constitute the type tests and shall be carried out on two samples of thermostats of the same type and rating selected preferably at random from a regular production lot. Before commencement of the tests, the thermostats shall be visually examined and inspected for obvious visual defects in respect of components, parts and their assembly construction, stability markings, provision of suitable terminals for supply connection, earthing and the effectiveness of screws and connections. The external surface finish shall be even and free from finishing defects.

**Table 101 Schedule of Type Tests**  
( Clause 104.1 )

SI No.	Test	Clause Reference
(1)	(2)	(3)
i)	Protection against electric shock	8
ii)	Temperature-rise	11
iii)	Electrical insulation and leakage current at operating temperature	13
iv)	Moisture resistance	15
v)	Insulation resistance and electric strength ( after humidity treatment )	16
vi)	Endurance	18
vii)	Stability and mechanical hazards	20
viii)	Mechanical strength	21
ix)	Cord grip and cord guard	25
x)	Earthing connection	27
xi)	Screws and connection	28
xii)	Creepage distance and clearances	29
xiii)	Resistance to heat, fire and tracking	30
xiv)	Resistance to rusting	31
xv)	Control head and mounting arrangements	101
xvi)	Performance requirements	102
xvii)	Operation under overhead conditions	103

#### 104.1.1 Criteria of Acceptance

Both samples shall successfully pass all the type tests for proving conformity with the requirements of the standard. If any of the samples fails in any of the type tests, the testing authority, at its discretion may call for fresh samples not exceeding twice the original number and subject them again to all tests or to the test(s) in which failure(s) occurred. No failure shall be permitted in the repeat test(s).

#### 104.2 Acceptance Test

The following shall constitute the acceptance tests:

Test	Clause Reference
a) Protection against electric shock	8
b) Temperature-rise	11
c) Insulation resistance and electric strength at operating temperature	13
d) Moisture resistance	15
e) Insulation resistance and electric strength ( after humidity treatment )	16

*Test*

*Clause Reference*

f) Earthing connection	27
g) Test for performance requirements	103

NOTE — For the purpose of the acceptance tests, the conditioning shall be done for 24 hours while carrying out the moisture resistance test.

**104.2.1** A recommended sampling procedure for acceptance test is given in Annex B of IS 302 : 1979.

**104.3 Routine Tests**

The following tests shall constitute the routine tests:

<i>Test</i>	<i>Clause Reference</i>
a) Protection against electric shock	8
b) High voltage	13.3.2 of IS 302 : 1979
c) Earthing connection	27

**ANNEX A**

**TABLES OF TYPE TESTS**

This Annex of IS 302 : 1979 is not applicable.

**ANNEX B**

( Clause 104.2.1 )

**SAMPLING PROCEDURE FOR ACCEPTANCE TESTS**

This Annex of IS 302 : 1979 is applicable as indicated in 104.2.1.

**ANNEX C**

**ELECTRONIC CIRCUITS**

This Annex of IS 302 : 1979 is applicable if electronic circuits are used.

**ANNEX D**

**MEASUREMENT OF TEMPERATURE WITH THERMOMETER**

This Annex of IS 302 : 1979 is applicable.

**ANNEX E**

**ALTERNATIVE TESTS FOR PROTECTED MOTOR UNITS**

This Annex of IS 302 : 1979 is not applicable.

**ANNEX F**

**IMPACT TEST APPARATUS**

This Annex of IS 302 : 1979 is applicable.

## **ANNEX G**

### **THERMAL CONTROLS AND OVERLOAD RELEASE**

This Annex of IS 302 : 1979 is not applicable.

## **ANNEX H**

### **MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**

This Annex of IS 302 : 1979 is applicable.

## **ANNEX J**

### **TEST FOR FIRE-RESISTING PROPERTIES**

This Annex of IS 302 : 1979 is applicable.

## **ANNEX K**

### **BNF JET TEST FOR DETERMINATION OF THICKNESS OF COPPER AND NICKEL PLATING**

This Annex of IS 302 : 1979 is not applicable.

## **ANNEX L**

### **APPROXIMATE MEASUREMENT OF THICKNESS OF CHROMIUM ON NICKEL, STEEL AND COPPER**

This Annex of IS 302 : 1979 is not applicable.

## FOREWORD

This Indian Standard ( First Revision ) was adopted by the Bureau of Indian Standards, after the draft finalized by the Electrical Appliances Sectional Committee, had been approved by the Electrical Division Council.

This standard was first published in 1967. This revision has been undertaken to align this standard with IS 302 : 1979 'General and safety requirements for household and similar electrical appliances ( fifth revision )', which is primarily based on the latest IEC Publication. For the sake of convenience of reference, the format of the standard has been modified to bring in line with IEC Publication on household electrical appliances.

This specification covers the general, safety and performance requirements of thermostat for general purpose electric ovens to ensure reliable operation, personal safety against electric shock and safety against the affects of excessive temperature and fire.

This specification applies to thermostats for general purpose ( industrial and domestic ) use only. The requirements of precision electric oven thermostats, such as those used in laboratory ovens, are different from those of the thermostats for domestic electric ovens and are excluded from the scope of this specification.

In order to enable interchangeability between different makes the preferred dimensions of the thermostats have been specified in 101.

This standard is to be read in conjunction with IS 302 : 1979.

Wherever a sub-clause of IS 302 : 1979 is to be replaced by a new text it has been indicated as under:

'*Replacement* — Followed by the new text.'

Any addition to the existing provisions of a sub-clause of IS 302 : 1979 has been indicated as under:

'*Addition* — Followed by the text of the additional matter.'

Clauses/Tables which are additional to those of IS 302 : 1979 are numbered starting from 101 and additional sub-clauses are numbered with the main clause number followed by 101, 102, etc, for example 7.101.

Additional Annexes have been numbered starting from A.

Should, however, any deviation exist between IS 302 : 1979 and this standard, the provisions of the latter shall apply.

While preparing this standard, assistance has been derived from the following:

IEC Publication 335-1 ( 1976 ) Safety of Household and Similar Electrical Appliances, Part 1 General Requirements. International Electrotechnical Commission.

IEC Publication 730 ( 1982 ) Automatic Controls for Electrical Household Appliances. International Electrotechnical Commission.

BS 3955 : Part 3 : 1979 Specification for Electrical Controls for Household and Similar General Purposes, Part 3 General and Specific Requirements. British Standards Institution.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values ( revised )'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

### Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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